THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A system for controlling a combustion environment within a combustion chamber of a hydronic heating unit, said hydronic heating unit including a boiler containing a HTF, a heating element disposed within the combustion chamber associated with the boiler means and a fluid distribution network in fluidic contact with the boiler thereby enabling movement of the HTF, said system comprising:

a first heating unit for adjusting fuel temperature, wherein fuel being transferred from a fuel source to the heating element has a predetermined temperature upon arrival at the heating element, said first heating unit including a first chamber and second chamber in thermal conductive contact, whereby regulating the HTF through the second chamber enables regulation of the fuel temperature of the fuel passing through the first chamber;

a second heating unit for adjusting combustion air temperature, wherein combustion air transferred to the heating element has a predetermined temperature upon arrival at the heating element, said second heating unit having a first portion and a second portion in thermal conductive contact, whereby regulating the HTF through the second portion enables regulation of the combustion air temperature of the combustion air passing through the first portion; and

a third heating unit interconnected with the boiler for heating the HTF to an operational temperature, such that the operational temperature of the HTF is sufficient to adjust fuel temperature and combustion air temperature to predetermined levels prior to ignition of the heating element.

2. The system in accordance with claim 1, where the flow of HTF to said first heating unit is regulated by a valve located within a fluid conduit system, said fluid conduit system providing a fluidic connection between the fluidic distribution network, the first heating unit and the boiler, thereby providing a source of heated HTF to the first heating unit and a means of recycling cooled HTF from the first heating unit to the boiler.

3. The system in accordance with claim 1, where the flow of HTF to said second heating unit is regulated by a second valve located within a second fluid conduit system, said second fluid conduit system providing fluidic connection between the fluidic distribution network, the

second heating unit and the boiler, thereby providing a source of heated HTF to the second heating unit and a means of recycling cooled HTF from the second heating unit to the boiler.

4. The system in accordance with claim 1, where the HTF within said third heating unit is heated using an electric heating device.

5. The system in accordance to claim 2, where said valve is adjusted using a control system, said control system receives temperature input from a thermostatic sensing device located within the first chamber of the first heating unit.

6. The system in accordance to claim 3, where said valve is adjusted using a second control system, said second control system receives temperature input from a second thermostatic sensing device located within the first portion of the second heating unit.

7. The system in accordance to claim 4, where said electric heating device is regulated using a third thermostatic sensing device located within the HTF reservoir of the boiler.

8. The system in accordance with claim 2 where said second chamber is a tubular shell with a first end and a second end, said tubular shell having an HTF inlet at the first end and an HTF outlet at the second end, said first chamber is a cylindrical container extending through the tubular shell having a fuel inlet proximate to the HTF outlet and a fuel outlet proximate to the HTF inlet thereby providing counter-flow heat transfer characteristics, said conduit system comprises of a pipe interconnecting the fluid distribution network, at a location proximate to the boiler, to the HTF inlet of the first heating unit and a second pipe interconnecting the first heating unit to the boiler, whereby fuel entering through the fuel inlet is heated as it flows through the cylindrical container before exiting through the fuel outlet for discharge into the combustion chamber.

9. The system in accordance with claim 2 where said second chamber is a tubular shell with a first end and a second end, said tubular shell having an HTF inlet at the first end and an HTF outlet at the second end, said first chamber is a helical pipe extending through the tubular

shell having a fuel inlet proximate to the HTF outlet and a fuel outlet proximate to the HTF inlet thereby providing counter-flow heat transfer characteristics, said conduit system comprises of a pipe interconnecting the fluid distribution network, at a location proximate to the boiler, to the HTF inlet of the first heating unit and a second pipe interconnecting the first heating unit to the boiler, whereby fuel entering through the fuel inlet is heated as it flows through the helical pipe before exiting through the fuel outlet for discharge into the combustion chamber.

10. The system in accordance with claim 2 where said second chamber is a helical pipe with a first end and a second end, said helical pipe having an HTF inlet at the first end and an HTF outlet at the second end, said first chamber is a tubular shell enclosing said helical pipe having a fuel inlet proximate to the HTF outlet and a fuel outlet proximate to the HTF inlet thereby providing counter-flow heat transfer characteristics, said conduit system comprises of a pipe interconnecting the fluid distribution network, at a location proximate to the boiler, to the HTF inlet of the first heating unit and a second pipe interconnecting the first heating unit to the boiler, whereby fuel entering through the fuel inlet is heated as it flows through the tubular shell before exiting through the fuel outlet for discharge into the combustion chamber.

11. The system in accordance with claim 3 where said first portion is a duct housing with an air inlet and an air outlet, said second portion is an HTF fluid-to-air heat radiator located within the housing, said second conduit system comprises of a third pipe interconnecting the fluid distribution network, at a location proximate to the boiler, to the HTF inlet of the second heating unit and a forth pipe interconnecting the second heating unit to the boiler whereby flow of air over the HTF fluid-to-air heat radiator is heated for discharge into the combustion chamber through the air outlet.

12. The system in accordance with claim 3 where said first portion is integrally associated with the combustion chamber, said combustion chamber having an air inlet, said second portion is an HTF fluid-to-air heat radiator located at said air inlet, said second conduit system comprises of a third pipe interconnecting the fluid distribution network, at a location

proximate to the boiler, to the HTF inlet of the second heating unit and a forth pipe interconnecting the second heating unit to the boiler whereby flow of air over the HTF fluid-to-air heat radiator is heated as it enters the combustion chamber.

13. The system in accordance with claim 4 where said third heating unit includes a vertically disposed thermally conductive tubular chamber with a top and bottom, an HTF inlet at the bottom providing a first connection to the boiler, an HTF outlet at the top providing a second connection to the boiler and an electric heating device in the form of a resistor integrally associated with the exterior of the chamber, said boiler having a top portion and a bottom portion, said top portion having a HTF inlet interconnected to the HTF outlet of the third heating unit, said bottom portion having an HTF outlet interconnected to the HTF inlet of the third heating unit, whereby HTF moves from the bottom inlet of the third heating unit to the top outlet of the third heating unit by convection currents as it is heated therein.

14. The system in accordance with claim 4 where said third heating unit includes an electric heating device in the form of a resistor integrally associated with the exterior of the boiler.

15. The system in accordance with claim 1 where said heating element is an atomizing-type oil burner, said HTF is circulated through said fluid distribution network using a fluid pump means, and said fuel source is a fuel tank.

16. The system in accordance with claim 15 where electrical power to said fluid pump means is interrupted when the third heating unit is activated.

17. The system in accordance to claim 5 where said thermostatic sensing device is sensitive to approximately 0.5°C changes in temperature.

18. The system in accordance to claim 6 where said second thermostatic sensing device is sensitive to approximately 0.5°C changes in temperature.

19. The system in accordance to claim 7 where said third thermostatic sensing device is sensitive to approximately 0.5°C changes in temperature.

20. The system in accordance to claim 1, where said fuel arriving at the heating element is within a range of about ± 0.5°C of the optimum fuel temperature and said combustion air arriving at the heating element is within a range of about ± 0.5°C of the optimum combustion air temperature.

21. The system in accordance to claim 1, where said fuel arriving at the heating element is within a range of about ± 3 °C of the optimum fuel temperature and said combustion air arriving at the heating element is within a range of about ± 3 °C of the optimum combustion air temperature.

22. A method for controlling a combustion environment within a combustion chamber of a hydronic heating unit, said hydronic heating unit including a boiler containing a HTF, a heating element disposed within the combustion chamber associated with the boiler, a fluid distribution network in fluidic contact with the boiler thereby enabling movement of the HTF, a fuel preheater disposed within the fluid distribution network, a combustion air preheater disposed within the fluid heating network, and a cold start preheater associated with the boiler, said method comprising:

detecting the temperature of the HTF within the boiler;

adjusting the temperature of the HTF within the boiler to a predetermined operating temperature;

detecting the temperature of fuel and combustion air entering the combustion chamber;

adjusting the temperature of fuel and combustion air entering the combustion chamber to a predetermined operating temperature; and

repeating the steps of detecting the temperature of fuel and combustion air entering the combustion chamber and adjusting the temperature of fuel and combustion air entering the combustion chamber to maintain the predetermined operating temperature.

23. The method in accordance to claim 22 where adjusting the temperature of the HTF in the boiler is achieved by preheating the HTF in said cold start preheater and detecting the temperature of the HTF within the boiler is achieved using a thermostatic HTF sensing device.

24. The method in accordance to claim 23 where said cold start preheater receives HTF temperature input from said thermostatic HTF sensing device, said HTF temperature input regulating electrical power to said cold start preheater.

25. The method in accordance to claim 22 where adjusting the temperature of fuel is achieved by preheating the fuel in said fuel preheater and detecting the temperature of fuel is achieved using a thermostatic fuel sensing device.

26. The method in accordance to claim 22 where adjusting the temperature of combustion air is achieved by preheating the combustion air in said combustion air preheater and detecting the temperature of combustion air is achieved using a thermostatic combustion air sensing device.

27. The method in accordance to claim 25 where said fuel preheater is regulated using an HTF flow valve to control the flow of HTF to said fuel preheater, said HTF flow valve receiving fuel temperature input from said thermostatic fuel sensing device, said fuel temperature input modifying the flow of heated HTF to said fuel preheater.

28. The method in accordance to claim 26 where said combustion air preheater is regulated using a second HTF flow valve to control the flow of HTF to said combustion air preheater, said second HTF flow valve receiving combustion air input from said thermostatic combustion air

sensing device, said combustion air input modifying the flow of heated HTF to said combustion air preheater.